CLAIMS

1. A flexible structure comprising integrated sensing means, said integrated sensing means being electrically accessible and being at least partly encapsulated in a flexible and electrically insulating body, said integrated sensing means being adapted to sense deformations of the flexible structure.

2. A flexible structure according to claim 1, wherein the flexible and electrically insulating body is a polymer-based body.

3. A flexible structure according to claim 2, wherein the flexible polymer-based body is formed by a first and a second polymer layer.

4. A flexible structure according to claim 3, wherein the integrated sensing means is positioned between the first and the second polymer layer.

5. A flexible structure according to claim 1, wherein the integrated sensing means forms a resistor.

6. A flexible structure according to claim 2, wherein the flexible polymer-based body is formed by an SU-8 polymer.

7. A flexible structure according to claim 3 , wherein the polymer layers are SU-8 polymers.

8. A flexible structure according to claim 5, wherein the resistor is formed by a conducting layer.

9. A flexible structure according to claim 8, wherein the conducting layer is a metal layer.

10. A flexible structure according to claim 9, wherein the metal layer is a gold layer.

11. A flexible structure according to claim 8, wherein the conducting layer comprises a semiconductor material.

12. A flexible structure according to claim 11, wherein the semiconductor material is silicon.

13. A flexible structure according to claim 1, further comprising a substantially rigid portion comprising an integrated electrical conductor being at least partly encapsulated in a substantially rigid and electrically insulating body, said integrated electrical conductor being connected to the integrated sensing means and being electrically accessible via a contact terminal on an exterior surface of the substantially rigid body.

14. A flexible structure according to claim 13, wherein the substantially rigid body is formed by a first and a second polymer layer, and wherein the integrated electrical conductor is positioned between the first and the second polymer layer.

15. A flexible structure according to claim 14, wherein the polymer layers forming the substantially rigid body are SU-8 polymer layers.

16. A flexible structure according to claim 13, wherein the integrated electrical conductor is formed by a metal layer.

17. A flexible structure according to claim 16, wherein the metal layer is a gold layer.

18. A flexible structure according to claim 13, wherein the integrated electrical conductor comprises a semiconductor material.

19. A flexible structure according to claim 18, wherein the semiconductor material is silicon.

20. A chip comprising a flexible structure according to claim 5, said chip further comprising at least three resistors on a substrate.

21. A chip comprising two flexible structures according to claim 5, said chip further comprising two resistors on a substrate.

22. A chip according to claim 21, wherein the substrate is a SU-8 polymer substrate.

23. A chip according to claim 21, wherein the substrate is a silicon substrate.

24. A chip according to claim 21, wherein each of the flexible structures comprises one resistor, and wherein the four resistors are connected to form a Wheatstone Bridge.

25. A sensor comprising a chip according to claim 24.

26. An actuator comprising a flexible structure comprising integrated actuator means, said integrated actuator means being electrically accessible and being at least partly encapsulated in a flexible and electrically insulating body, said integrated actuator means being adapted to induce deformations of the flexible structure.

27. An actuator according to claim 26, wherein the integrated actuator means comprises a metal layer and wherein the flexible and electrically insulating body is a polymer-based body.

28. An actuator according to claim 27, wherein the polymer-based body is formed by an SU-8 polymer.

29. A chip processing method comprising

- providing a first insulating layer and patterning this first insulating layer so as to form an upper part of a cantilever,

- providing a first conducting layer and patterning this first conducting layer so as to form at least one conductor on a first area of the patterned first insulator,

- providing a second conducting layer and patterning this second conducting layer so as to form at least one resistor on a second area of the patterned first insulator, and

- providing a second insulating layer so as to at least partly encapsulate the patterned first and second conducting layers, and patterning this second insulating layer so as to form a lower part of a cantilever.

30. A chip processing method according to claim 29, wherein the insulating layers are polymer layers.

31. A chip processing method according to claim 30, wherein the insulating layers are SU-8 polymer layers.

32. A chip processing method according to claim 29, wherein the conducting layers are metal layers.

33. A chip processing method according to claim 32, wherein the metal layers are gold layers.

34. A chip processing method according to claim 29, further comprising the step of providing a relatively thicker layer on the second insulating layer and patterning the relatively thicker layer so as to form a substrate.

35. A chip processing method according to claim 34, wherein the relatively thicker layer is a polymer layer.

36. A chip processing method according to claim 34, wherein the relatively thicker layer is a silicon layer.

37. A chip processing method according to claim 34, further comprising the steps of

- providing a sacrificial layer on a silicon wafer, wherein the first insulating layer is provided on the sacrificial layer, and

- removing the silicon wafer after the providing and the patterning of the relatively thicker layer.

38. A chip processing method according to claim 35, wherein the relatively thick polymer layer is a SU-8 polymer layer.